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10/790,180	03/02/2004	Takeshi Arai	501.43537X00	3237

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EXAMINER

ZERVIGON, RUDY

ART UNIT	PAPER NUMBER
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1763

MAIL DATE	DELIVERY MODE
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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/790,180

Applicant(s)

ARAI ET AL.

Examiner

Rudy Zervigon

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 June 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 5,8,9 and 11-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 5,8,9 and 11-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

2. Claims 5, 11, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsukazaki; Hisashi et al. (US 5837094 A) in view of Gupta; Anand et al. (US 6125789 A) and Hamelin; Thomas et al. (US 6951821 B2). Tsukazaki teaches an apparatus (Figure 3; column 8, lines 10-67) for processing a sample (1, Figure 3; column 8, lines 10-67), comprising: a processing chamber (4,12, Figure 3; column 8, lines 10-67) provided with a platform (2, Figure 3) on which the sample (1, Figure 3; column 8, lines 10-67) is placed, the processing chamber (4,12, Figure 3; column 8, lines 10-67) being provided with a measurement window (15d, Figure 3; column 1, lines 44-59) formed on a wall surface (12, Figure 3; column 8, lines 10-67); exhaustion means ("booster pump"; column 6, lines 6-11) for exhausting the processing chamber (4,12, Figure 3; column 8, lines 10-67) a gas injector (7, Figure 3; column 8, lines 10-67) for injecting a gas into the processing chamber (4,12, Figure 3; column 8, lines 10-67); a plasma generator (not shown; column 2, lines 27-36) for generating plasma in the processing chamber (4,12, Figure 3; column 8, lines 10-67) after the gas has been injected into the processing chamber (4,12, Figure 3; column 8, lines 10-67) by the use of the gas injector (7, Figure 3; column 8, lines 10-67) – claim 5

Tsukazaki further teaches:

- i. Tsukazaki's particle detector unit (15, Figure 3; column 1, lines 44-59) installed outside of the processing chamber (4,12, Figure 3; column 8, lines 10-67) detecting light which is scattered

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from a particle (column 3; lines 1-8), the laser (15a, Figure 3; column 1, lines 44-59) introducing a laser from outside of the processing chamber (4,12, Figure 3; column 8, lines 10-67) to inside of the processing chamber (4,12, Figure 3; column 8, lines 10-67) through the measurement window (15d, Figure 3; column 1, lines 44-59); Tsukazaki's particle detector unit (15, Figure 3; column 1, lines 44-59) monitors the light scattered from the particle crossing the plane of the processing window (15c; Figure 3; column 1, lines 44-59) and passing outside of the processing chamber (4,12, Figure 3; column 8, lines 10-67) through the measurement window (15d, Figure 3; column 1, lines 44-59) - claim 5

ii. The apparatus of claim 5, wherein the exhaustion means (12; Figure 3 – see above) enables evacuation of the processing chamber (4,12, Figure 3; column 8, lines 10-67), and the plasma generator generates the plasma after the processing chamber (4,12, Figure 3; column 8, lines 10-67) has been evacuated, as claimed by claim 11 – Applicant's claim requirement of "and the plasma is generated after the processing chamber has been evacuated" is a claim requirement of intended use in the pending apparatus claims. Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter , 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto , 136 USPQ 458, 459 (CCPA 1963); MPEP2111.02).

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iii. The apparatus (Figure 3; column 8, lines 10-67) according to claim 5, wherein the laser (15a, Figure 3; column 1, lines 44-59) and the detector (15, Figure 3; column 1, lines 44-59) are arranged at a substantially same position outside of the processing chamber (4,12, Figure 3; column 8, lines 10-67) with respect to the measurement window (15d, Figure 3; column 1, lines 44-59) – claim 12

Tsukazaki does not teach that Tsukazaki's particle detector (15, Figure 3; column 1, lines 44-59) scans a laser (15a, Figure 3; column 1, lines 44-59) beam in a plane inside of the processing chamber (4,12, Figure 3; column 8, lines 10-67) and outside of a region (4, Figure 3; column 8, lines 10-67) where the plasma is generated (between 7 and 2; Figure 3; column 2, lines 27-36) - claim 8, 13

Tsukazaki further does not exhaustion means ("booster pump"; column 6, lines 6-11) for exhausting the processing chamber (4,12, Figure 3; column 8, lines 10-67) by a turbo-molecular pump through an exhaust passage equipped with a butterfly valve – claim 5

Gupta teaches a similar apparatus (Figure 1B, 3B) including a scanning (335; Figure 3B) laser system (330, 335; column 8; line 41 – column 9, line 23) for particle detection and processing.

Hamelin teaches a wafer processing system/unit (Figure 2,3) including a vacuum pumping system/unit (280; Figure 2) comprising a mechanical booster vacuum pump, or, equivalently, a turbo-molecular vacuum pump (TMP Figures 2,3; column 9, line 60 – column 10, line 4).

Hamelin further teaches a butterfly valve (not shown; column 9, line 60 – column 10, line 4) constituting his vacuum pumping system/unit (280; Figure 2; column 9, line 60 – column 10, line 4).

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It would have been obvious to one of ordinary skill in the art at the time the invention was made to add Gupta's laser scanner (335; Figure 3B) to Tsukazaki's particle detector (15, Figure 3; column 1, lines 44-59), and for Tsukazaki to replace his exhaustion means ("booster pump"; column 6, lines 6-11) with Hamelin's exhaustion means (280; Figure 2).

Motivation to add Gupta's laser scanner (335; Figure 3B) to Tsukazaki's particle detector (15, Figure 3; column 1, lines 44-59) is for detecting particles in a concentrated "volume" as taught by Gupta (column 8; lines 26-40), motivation for Tsukazaki to replace his exhaustion means ("booster pump"; column 6, lines 6-11) with Hamelin's exhaustion means (280; Figure 2) is for conducting processing applications that are "low pressure" as taught by Hamelin (column 9; lines 65-68).

3. Claims 8, 9, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsukazaki; Hisashi et al. (US 5837094 A) in view of Gupta; Anand et al. (US 6125789 A). Tsukazaki and Gupta are discussed above.

Tsukazaki further teaches:

iv. Tsukazaki's particle detector unit (15, Figure 3; column 1, lines 44-59) installed outside of the processing chamber (4,12, Figure 3; column 8, lines 10-67) detecting light which is scattered from a particle (column 3; lines 1-8), the laser (15a, Figure 3; column 1, lines 44-59) introducing a laser from outside of the processing chamber (4,12, Figure 3; column 8, lines 10-67) to inside of the processing chamber (4,12, Figure 3; column 8, lines 10-67) through the measurement window (15d, Figure 3; column 1, lines 44-59); Tsukazaki's particle detector unit (15, Figure 3; column 1, lines 44-59) monitors the light scattered from the particle crossing the plane of the processing window (15c; Figure 3; column 1, lines 44-59) and passing outside of

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the processing chamber (4,12, Figure 3; column 8, lines 10-67) through the measurement window (15d, Figure 3; column 1, lines 44-59) - claim 8

v. A plasma processing apparatus (Figure 3; column 8, lines 10-67) control system (31, Figure 3) comprising: a plasma processing unit (Figure 3; column 8, lines 10-67) including a chamber (4,12, Figure 3; column 8, lines 10-67), a plate (2, Figure 3) on which a sample (1, Figure 3; column 8, lines 10-67) is placed, a plasma generator (not shown; column 2, lines 27-36), and a measurement window (15d, Figure 3; column 1, lines 44-59) formed on a wall (12, Figure 3; column 8, lines 10-67) of the chamber (4,12, Figure 3; column 8, lines 10-67), the processing unit (Figure 3; column 8, lines 10-67) being used for processing the sample (1, Figure 3; column 8, lines 10-67) placed on the plate (2, Figure 3) with the plasma generated by the plasma generator (not shown; column 2, lines 27-36) inside the chamber (4,12, Figure 3; column 8, lines 10-67); and a controller unit (31, Figure 3) for receiving a signal output from the processing unit (Figure 3; column 8, lines 10-67) and a detection signal from the particle detecting unit (15, Figure 3; column 1, lines 44-59) to control the processing apparatus (Figure 3; column 8, lines 10-67) and contaminant data - claim 8

vi. The plasma processing apparatus (Figure 3; column 8, lines 10-67) according to claim 8, wherein the controlling unit (31, Figure 3) compares the output signal ("end point"; column 5, lines 56-64; column 7, lines 31-40) from the processing unit (Figure 3; column 8, lines 10-67) with the detection signal by the particle detecting unit (15, Figure 3; column 1, lines 44-59) to identify a contaminant source in the processing apparatus (Figure 3; column 8, lines 10-67), as claimed by claim 9

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vii. The plasma processing apparatus (Figure 3; column 8, lines 10-67) according to claim 8, wherein the particle detecting unit (15, Figure 3; column 1, lines 44-59) includes a laser (15a, Figure 3; column 1, lines 44-59) introduce the laser beam and a detector which which detects the scattered light and which are arranged at a substantially same position outside of the processing chamber (4,12, Figure 3; column 8, lines 10-67) with respect to the measurement window (15d, Figure 3; column 1, lines 44-59) – claim 13

Tsukazaki does not teach that Tsukazaki's particle detector (15, Figure 3; column 1, lines 44-59) scans a laser (15a, Figure 3; column 1, lines 44-59) beam in a plane inside of the processing chamber (4,12, Figure 3; column 8, lines 10-67) and outside of a region (4, Figure 3; column 8, lines 10-67) where the plasma is generated (between 7 and 2; Figure 3; column 2, lines 27-36) - claim 8, 13

Gupta teaches a similar apparatus (Figure 1B, 3B) including a scanning (335; Figure 3B) laser system (330, 335; column 8; line 41 – column 9, line 23) for particle detection and processing.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add Gupta's laser scanner (335; Figure 3B) to Tsukazaki's particle detector (15, Figure 3; column 1, lines 44-59).

Motivation to add Gupta's laser scanner (335; Figure 3B) to Tsukazaki's particle detector (15, Figure 3; column 1, lines 44-59) is for detecting particles in a concentrated "volume" as taught by Gupta (column 8; lines 26-40).

Response to Arguments

4. Applicant's arguments filed June 14, 2007 have been fully considered but they are not persuasive.

5. Applicant states that Tsukazaki's does not teach the claimed structure where the laser light of the instant application is introduced into the processing chamber through the same measurement window through which detected light passes.

6. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., "light of the instant application is introduced into the processing chamber through the same measurement window through which detected light passes") are not recited in the rejected claims. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Rudy Zervigon whose telephone number is (571) 272-

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1442. The examiner can normally be reached on a Monday through Thursday schedule from 8am through 7pm. The official fax phone number for the 1763 art unit is (571) 273-8300. Any Inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Chemical and Materials Engineering art unit receptionist at (571) 272-1700. If the examiner can not be reached please contact the examiner's supervisor, Parviz Hassanzadeh, at (571) 272-1435.

Handwritten signature of Parviz Hassanzadeh, dated 8/20/7.